The Invention Claimed Is

1. A connector for use in connecting an axial end portion of a tubular medical graft to the side wall of a patient's tubular body tissue conduit so that the lumen of the graft communicates with the lumen of the conduit through an aperture in the side wall of the conduit to permit body fluid flow between the lumens without leakage of body fluid to the outside of the graft and the conduit adjacent the connector comprising:

an annular structure having first and second axially adjacent substructures, the first substructure being configured to be disposed substantially concentrically inside the axial end portion of the graft and being circumferentially enlargeable to press the axial end portion of the graft radially outwardly toward the body tissue surrounding the aperture, and the second substructure including a plurality of struts that are configured to extend substantially radially outwardly to engage the body tissue surrounding the aperture and hold the axial end portion of the graft in body-fluid-tight engagement with the side wall of the conduit annularly around the aperture, wherein the first substructure is resiliently biased to circumferentially enlarge to at least some degree by itself.

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2. The connector defined in claim 1 ~~wherein~~ the annular structure comprises:

a ~~ring~~ having convolutions that ~~repeatedly~~ traverse a circumference of the annular

Sub. a3> structure, the ring being circumferentially ~~enlargeable by straightening~~ out the convolutions to some degree.

3. The connector defined in claim 1 wherein the struts are configured to extend through the annular portion of the graft to engage surrounding body tissue.

4. The connector defined in claim 1 wherein the struts include hooks configured to penetrate surrounding body tissue.

5. The connector defined in claim 1 wherein the struts include barbs configured to penetrate surrounding body tissue and to resist withdrawal of the struts from the penetrated body tissue.

6. The connector defined in claim 1 wherein the struts are resiliently biased to extend substantially radially outwardly to engage surrounding body tissue, and wherein the struts are additionally configured to elastically deflect substantially parallel to an axis with which the annular structure is substantially coaxial.

7. The connector defined in claim 1 wherein the struts are resiliently biased to extend substantially radially outwardly to engage surrounding body tissue, and wherein the struts are additionally configured to elastically deflect substantially into a cone which has its apex on an axis about which the annular structure is substantially coaxial.

8. The connector defined in claim 1 wherein the annular structure is at least partly made of nitinol.

9. The connector defined in claim 1 wherein the annular structure is at least partly made of stainless steel.

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10. The connector defined in claim 3 wherein the ring is produced from a tube by removing interdigitated portions from the tube, alternating removed portions extending in from opposite ends of the tube.

11. The connector defined in claim 10 wherein the tube has thickness less than the spacing between adjacent removed portions.

12. The connector defined in claim 1 wherein the annular structure further comprises:

a tissue clamping structure configured to move toward the struts in response to circumferential enlargement of the annular structure in order to clamp tissue between the clamping structure and the struts.

13. The connector defined in claim 12 wherein the annular structure further comprises:

a ring which is serpentine along a circumference of the annular structure, the struts being connected to the ring adjacent one axial end of the connector and the tissue clamping structure being attached to the ring adjacent the other axial end of

the connector so that when the ring is circumferentially enlarged and the ring accordingly becomes less serpentine, the struts and the tissue clamping structure move toward one another.

14. The connector defined in claim 13 wherein the tissue clamping structure comprises:

a second ring substantially parallel to and concentric with the first-mentioned ring.

15. The connector defined in claim 14 wherein the tissue clamping structure comprises a plurality of struts connecting the second ring to the first-mentioned ring adjacent said other axial end of the connector.

16. The connector defined in claim 6 further comprising:

a tubular structure axially reciprocable relative to the connector into and out of a position in which the tubular structure is substantially concentric outside the annular structure and releasably holds the struts substantially parallel to the axis with which the annular structure is substantially coaxial.

17. The connector defined in claim 7 further comprising:

a yieldable structure for releasably holding the struts in the cone.

18. The connector defined in claim 17 wherein the yieldable structure comprises:

a yieldable band around the struts.

19. The connector defined in claim 17 wherein the yieldable structure comprises:

a yieldable cone over the struts.

20. The connector defined in claim 7 further comprising:

a removable member around the struts.

21. The connector defined in claim 20 wherein the removable member comprises:

a wire wrapped around the struts.

22. The connector defined in claim 20 wherein the removable member comprises:

a coil around the struts configured to release the struts when the coil is rotated about its central longitudinal axis.

23. The connector defined in claim 7 wherein each of the struts includes an initially radially inwardly directed hook, and wherein the connector further comprises:

a removable member for releasably engaging the hooks.

24. The connector defined in claim 1 wherein the annular structure further comprises:

a multi-sided ring having a plurality of radially outwardly pointing corners circumferentially spaced from one another around the ring.